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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,111	03/29/2004	J. Joseph Armstrong	KLAC0080	1534

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EXAMINER

FINEMAN, LEE A

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,111

Applicant(s)

ARMSTRONG ET AL.

Examiner

Lee Fineman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 and 67-74 is/are pending in the application.
- 4a) Of the above claim(s) 7, 10, 12, 15, 16, 20-50, 63, 65 and 66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 9, 11, 13, 14, 17-19, 64 and 67-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, Species E (fig. 7) in the reply filed on 19 December 2005 is acknowledged. The traversal is on the ground(s) that the species selection was arbitrary and further embodiments (e.g., fig. 10) were disclosed. This is not found persuasive because all figures (3-9) relating to Group I (an objective) were identified and shown to be patentably distinct. The other figures relate to prior art (fig. 1 and 2) or Group II (variable focal length optical systems, figs. 10-12).

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 7, 10, 12, 15 16, 20-50, 63 and 65-66 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Regarding claims 31, 63 and 65, applicant states that this claim is directed to the elected species. However, the limitations to **less than** 11 elements included in claim 31 is clearly drawn to the objectives of species A-D, F and G, which are non-elected and claims 63 and 65 depends on claims 7 and 29 above which were withdrawn by the applicant. Therefore, claims 31, 63 and 65 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Regarding claims 20-50 and 66, the examiner thanks the applicant for amending the brief description of the drawing for fig. 7 to correct the wavelength range. However upon further examination of the detailed specification (see specifically page 31, lines 12-13), it is noted that

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fig. 7 has a field size of 0.1 mm and not approximately 0.15 mm as written in the brief description of the drawing. Therefore claims 20-50 and 66, which include the limitation “a field size of greater than or equal to approximately 0.15 mm,” are further withdrawn as being drawn to a non-elected invention, e.g., species A.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a microscope with a flange (claims 17 and 18) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: In the brief description of the drawing for fig. 7, it is written that the objective has a field size of approximately 0.15 mm. However, the detailed specification (see specifically page 31, lines 12-13), says that the field size of the objective of fig. 7 is 0.1 mm.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2, 13-14 and 68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2 and 68 include the limitation “wherein said objective provides a **relative** bandwidth in excess of 0.5 in the presence of said light energy.” However a relative bandwidth is not defined in the specification in any way to determine to what the bandwidth is relative, and therefore the term is indefinite.

Claims 13 and 14 include the limitation “providing **corrected** bandwidth less than 0.9 (0.07) with a center wavelength of 633 (196) nm” which is unclear. Again corrected bandwidth

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is not defined in the specification in a way to determine to what it is. Is it a ratio, or should 0.9 or 0.07 have a value like nanometers or micrometers?

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1, 5-6, 8, 17-18, 67 and 71-73 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 43 and 45-48 of copending Application No. 10/646073. Although the conflicting claims are not identical, they are not patentably distinct from each other the claims of the instant application are merely broader than or an obvious variation of the claims of copending Application No. 10/646073.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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8. Claims 1, 3, 8, 9, 17-19, 67, 69 and 73-74 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4, 7-9 and 11 of copending Application No. 10/434374 in view of Yonekubo, US 4,108,794 or Suwa, US 5,825,043.

Application No. 10/434374 discloses an objective constructed of a single glass material with a focusing lens, field lens and Mangin mirror element having diameters less than 25 millimeters. Application No. 10/434374 lacks the light energy going through an immersion liquid to the specimen. Immersion liquids, including water and oil, are well known in the microscope/lithography art to obtain better imaging performance. For example, Yonekubo or Suwa teach using immersion liquids, including water and oil, to obtain better imaging performance (see Yonekubo, columns 1-2 and Suwa, column 3, lines 24-33). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a immersion liquid like those taught in Yonekubo or Suwa with the objective of Application No. 10/434374 to provide better imaging performance.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 1, 2, 5-6, 8-9, 11, 13-14, 17-19, 64, 67, 68, 71-73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shafer et al. (Henceforth Shafer '722), US 2001/0040722 A1, in view of Yonekubo or Suwa.

Regarding claims 1, 2, 13-14, 64, 67 and 68, Shafer '722 disclose an objective (fig. 3) for use in inspecting a specimen (309, not shown), said objective employed with light energy having a wavelength in the range of approximately 190 to 1000 nanometers (page 6, section [0082]), comprising: a focusing lens group (308) comprising at least one focusing lens (308) configured to receive said light energy and form focused light energy; a field lens (304) oriented to receive focused light energy from said focusing lens group (fig. 3) and provide intermediate light energy; and a Mangin mirror arrangement (306) positioned to receive the intermediate light energy from the field lens (fig. 3) and form controlled light energy. Shafer '722 disclose the claimed invention except for an immersion liquid between the Mangin mirror and the specimen.

Immersion liquids, including water and oil, are well known in the microscope/lithography art to obtain better imaging performance. For example, Yonekubo or Suwa teach using immersion liquids, including water and oil (which has a refractive index greater than water), to obtain better imaging performance (see Yonekubo, columns 1-2 and Suwa, column 3, lines 24-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a immersion liquid like those taught in Yonekubo or Suwa with the objective of Shafer '722 to provide better imaging performance. Therefore, the immersion liquid would be between the Mangin mirror and the specimen. Regarding claims 2, 13, 14 and 68, in as much as the claims are able to be understood in light of the 35 U.S.C 112 rejection made above the rejection applies.

Regarding claims 8 and 73, Shafer '722 further disclose wherein each lens used in the objective has a diameter of less than approximately 25 millimeters (fig. 3).

Regarding claims 9, 11 and 74, Shafer '722 further disclose wherein all lenses are constructed of a single glass material that is fused silica (page 6, section [0082]).

Regarding claims 5, 6, 71 and 72, Shafer '722 further disclose said objective (fig. 3) configured to have a numerical aperture in excess of approximately 0.9 or 1.1 (page 7, section [0085]).

Regarding claims 17 and 18, Shafer '722 in view of Yonekubo or Suwa as disclosed above further disclose said objective having a long working distance used with a microscope (figs. 1 and 2) having a flange (at 102 or 202) but is silent as to the location of the flange being approximately 45 millimeters from the specimen or at least approximately 100 millimeters from the specimen. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the flange be approximately 45 millimeters from the specimen or at least approximately 100 millimeters from the specimen, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. One would have been motivated to have the flange be approximately 45 millimeters from the specimen or at least approximately 100 millimeters from the specimen for the purpose of having an appropriate working area for interacting with/changing the specimen. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 19, Shafer '722 further disclose wherein said focusing lens and field lens form an intermediate image between said field lens and said Mangin mirror arrangement (fig 3).

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11. Claims 1-3, 13-14, 64 and 67-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shafer et al., US 5,717,518 (henceforth Shafer '518) in view of Yonekubo or Suwa.

Regarding claims 1, 2, 13-14, 64, 67 and 68, Shafer '518 disclose an objective (fig. 1) for use in inspecting a specimen (column 2, lines 39-42, not shown), said objective employed with light energy having a wavelength in the range of approximately 190 to 1000 nanometers (column 4, lines 10-34), comprising: a focusing lens group (11) comprising at least one focusing lens (21) configured to receive said light energy and form focused light energy; a field lens (15) oriented to receive focused light energy from said focusing lens group (fig. 1) and provide intermediate light energy; and a Mangin mirror arrangement (17) positioned to receive the intermediate light energy from the field lens (fig. 1) and form controlled light energy. Shafer '518 disclose the claimed invention except for an immersion liquid between the Mangin mirror and the specimen. Immersion liquids, including water and oil, are well known in the microscope/lithography art to obtain better imaging performance. For example, Yonekubo or Suwa teach using immersion liquids, including water and oil (which has a refractive index greater than water), to obtain better imaging performance (see Yonekubo, columns 1-2 and Suwa, column 3, lines 24-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a immersion liquid like those taught in Yonekubo or Suwa with the objective of Shafer '518 to provide better imaging performance. Therefore, the immersion liquid would be between the Mangin mirror and the specimen. Regarding claims 2, 13, 14 and 68, in as much as the claims are able to be understood in light of the 35 U.S.C 112 rejection made above the rejection applies.

Regarding claim 3 and 69, Shafer '518 further disclose wherein said Mangin mirror arrangement comprises a concave lens/mirror element (39) having substantially curved concave surfaces and second surface reflectivity (41); and a relatively flat lens/mirror element (43) having minimally curved surfaces and second surface reflectivity (45).

12. Claims 4 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shafer '518 in view of Yonekubo or Suwa, as applied to claims 3 or 69 above, and further in view of Hamblen, US 5,159,495.

Shafer '518 in view of disclose Yonekubo or Suwa as applied to claims 3 or 69 above disclose the claimed invention except for wherein said Mangin mirror arrangement further comprises a third lens having one surface in contact with the immersion liquid. Hamblen teaches in fig. 3 a catadioptric system including a Mangin mirror arrangement that also includes an optional third lens (40, column 55-60) closest to the sample (fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a third lens as taught by Hamblen to the Mangin mirror arrangement of Shafer '518 in view of disclose Yonekubo or Suwa to further help focus the light energy rays (Hamblen, column 55-60). Therefore, this lens, as the closest would have one surface in contact with the immersion liquid.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (571) 272-2313. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LAF

March 7, 2006



MARK A. ROBINSON
PRIMARY EXAMINER